

SECRET

838/28759

a control system which is connected between said target tracker and said drive means and which includes means for:

a) deriving look-angle demand data values indicative of a desired position of a target relative to said missile, these data values including a lateral steering data value and an angle data value indicative of the angular movement of the polar co-ordinate of said desired position;

b) limiting said angle data value to between two limit values;

c) forming from said limited angle data value a rotation control signal for controlling said rotation of said body part by said drive means;

d) limiting said lateral steering data value; and

e) combining said limited angle data value and said limited lateral steering data value to form a steering control signal for controlling lateral steering of said missile by said drive means.

3. A missile according to claim 2, wherein said control system comprises computer means which is programmed to carry out functions a) through e).

4. A missile according to claim 2, wherein said control system comprises distinct circuit means for carrying out respective ones of said functions a) through e).

5. A missile according to claim 2, wherein said control system further comprises:

SECRET

SECRET

838/28759

means for deriving a sightline data value indicative of the separation between a target sightline and said longitudinal axis;

means for deriving a magnitude data value indicative of the magnitude of said polar co-ordinates of said desired position;

means for comparing the sightline data value and the magnitude data value with respective predetermined threshold values; and

means for varying, in dependence upon the comparison, the limits imposed upon said angle data value and said lateral steering data value such, that if both the sightline data value and the magnitude data value are less than the respective threshold values, the range of said rotation control signal is reduced while the range of said steering control signal is increased relative to the case where either or both of the sightline data value and the magnitude data value exceed(s) the respective threshold values.

6. A missile according to claim 5, wherein said steering control signal is formed by deriving a data value $L'Hd = LJd \tan \phi d$ where LJd is said limited lateral steering data value and ϕd is said limited angle data value, and by forming a data value LHd which, when either or both of said sightline data value and the magnitude data value exceed(s) the respective threshold values, is equal to $L'Hd$ and which, when both the sightline data value and the magnitude data value are less than the respective threshold values, is equal to $L'Hd$ plus $(LHn -$

SECRET

SECRET

838/28759

L'Hd) if $(LHn - L'Hd)$ lies between two further predetermined limit values or is otherwise equal to L'Hd plus that one of the two further predetermined limit values which is nearest to $(LHn - L'Hd)$, LHn being a further lateral steering direction perpendicular to the direction with which the first-mentioned lateral steering data value is associated.

7. A missile according to claim 2, wherein to rotate said field-of-view with respect to said longitudinal axis, said drive means comprises means for controlling roll of the missile itself, said missile including one of a roll-rate and a roll-position autopilot system connected between said control system and said drive means.

8. A homing missile comprising:

an elongate body supporting a window at one side of the body and set back from the front of the body;

a target tracker mounted inside said body and operable for tracking a target seen by the tracker via said window; the window defining for said target tracker a rectangular field-of-view which contains but is asymmetrically disposed with respect to the longitudinal axis of said body;

steering means mounted on said body for steering the missile laterally with respect to said longitudinal axis and for controlling roll of the body about that axis;

drive motor means for driving said steering means; and

a control system connected between said target tracker and

SECRET

SECRET

838/28759

said steering and roll control means, the control system including look-angle demand signal deriving means for deriving signals indicative of a desired position of a target relative to the missile, said signals including lateral steering signals and also including angle signals indicative of the angular arguments of the polar coordinates of said desired position, first limiting means connected to said signal deriving means to receive said angle signals and for limiting these signals to between two limit values, signal processing means connected to said first limiting means and said steering and roll control means and operable for receiving said limited angle signals and for forming therefrom signals for controlling said roll of said body, second limiting means for receiving said lateral steering signals and limiting them to less than a limit value, and combining means connected to said first and second limiting means and said steering and roll control means and operable for combining the limited angle signals and the limited lateral steering signals to form steering control signals for controlling lateral steering of the missile.

SECRET